

REMARKS

The final Office Action of October 4, 2007 (hereinafter the "Office Action"), rejected Claims 33-42 under 35 U.S.C. § 101 as being directed to nonstatutory subject matter. Claims 1-10, 13, 15-27, and 31-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,729,463, issued to Koenig et al. (hereinafter "Koenig"), in view of U.S. Patent No. 6,487,525, issued to Hall et al. (hereinafter "Hall"). Additionally, Claims 11, 12, 14, 28-30, 41, and 42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Koenig in view of Hall, and in further view of U.S. Patent No. 6,453,209, issued to Hill et al. (hereinafter "Hill").

With this response, applicants respectfully traverse the rejections and request reconsideration and allowance of the pending claims. Prior to presenting the reasons why the applicants believe that the pending claims are in condition for allowance, a brief summary of the disclosed subject matter and brief descriptions of the teachings of the cited references are provided. These summaries, however, are presented solely to assist the Examiner in recognizing the differences between the pending claims and the cited references, and should not be construed as limiting on the disclosed subject matter.

Brief Description of Claimed Subject Matter

The claimed subject matter is directed to an improved system and method for generating frame designs for the manufacture of vehicles. According to the provided system and method, a specification regarding components to be mounted onto a vehicle frame is obtained. This specification includes a plurality of components to be configured to the frame. Each component identified in the specification is associated with at least three pieces of data: (1) location information corresponding to a starting position for configuring the component to the frame;

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- (2) a range of additional positions at which the component can be configured to the frame; and
- (3) three-dimensional data corresponding to a tessellated representation of the component.

Applicants note that, in regard to the claimed subject matter, there is a temporal aspect that is not found in the cited references. More particularly, according to the claimed subject matter, the processing data that is used to configure the corresponding components, is obtained **prior to** actually configuring the components to a vehicle frame. As already suggested, this processing data includes a starting position, a range of positions, and three-dimensional data. Applicants believe that the cited references fail to disclose the temporal aspect of first obtaining processing data prior to configuring components to a frame.

Once the specification is obtained, components are iteratively selected and configured to the frame. In particular, for each selected component, the component's logical starting position is set for the component and a determination is made as to whether the selected component interferes with any component already configured to the frame. As long as the selected component interferes with another component already configured to the frame, the position of the selected component is set to another position within the range of additional positions specified for the component. Once a position is set for the selected component that does not interfere with other components already configured to the vehicle frame, the selected component is configured to the frame at the current position.

Another aspect of the disclosed subject matter relates to positioning components to the vehicle frame that further correspond to holes or openings that exist for the purpose of allowing a component to be attached to the frame.

Advantageously, having a starting position, range of positions, and three-dimensional data regarding the component enables the system to automate the process of locating components

on a vehicle frame in an efficient manner and ensure that the components will fit in concert with one another, all within the constraints that are placed upon each component.

Brief Description of Koenig (U.S. Patent No. 5,729,463)

Koenig is purportedly directed to designing lightweight automobile bodies. In particular, Koenig discloses designing automobile bodies such that they meet certain performance goals. Koenig, Abstract. This design process includes selecting performance targets including such information as static torsion, bending, and vibration targets. The type of materials to be used is also selected. Koenig, Col. 2, lines 36-41. Apparently, at each step of development, performance targets are evaluated such that the design only proceeds once target elements are met.

While Koenig generally discloses designing a vehicle using a computer system, Koenig fails to disclose or teach obtaining processing data **for each of the plurality of components** that "includes location information corresponding to **a logical starting position** for attempting to locate a component on the frame and **a range of additional positions** to locate the component and **three-dimensional data corresponding to a tessellated representation of the component**," as recited in the independent claims. Koenig also fails to disclose determining whether a component interferes with other components according to the three-dimensional data for the component, and modifying the component according to the range of additional positions to find a position where the component does not interfere with other components already configured to the vehicle frame.

Brief Description of Hall (U.S. Patent No. 6,487,525)

Hall is purportedly directed to designing a HVAC assembly for a climate control system on a vehicle. In particular, after a user selects a particular HVAC architecture, the Hall system

incorporates components required by the architecture and integrates them into the vehicle system.

Hall also purportedly discloses determining if the HVAC assembly interferes with other parts of the vehicle or meets particular clearances, particularly with the vehicle body, and modifies the location of the assembly, and/or the shape of its components, when there is an interference.

While Hall purportedly discloses checking for interferences and modifying positions when an interference is encountered, Hall fails to disclose obtaining processing data for each of the plurality of components that "includes location information corresponding to **a logical starting position** for attempting to locate a component on the frame and **a range of additional positions** to locate the component and three-dimensional data corresponding to a tessellated representation of the component," as recited in the independent claims.

35 U.S.C. § 101 Rejections

In regard to Claim 33, in addition to amending the claim to recite temporal aspects of the claimed subject matter, applicants have amended this claim to describe that, upon execution of the executable module stored on the computer-readable medium, the executed modules configure a computing device to generate a frame design of a vehicle according to the configured positions of the plurality of components. In this light, applicants submit that the claimed invention no longer recites simply software *per se*, as suggested by the Office Action, but now further recites useful, tangible, and concrete results as required under 35 U.S.C. § 101.

In view of the amendments to Claim 33, applicants submit that Claim 33 and, by dependency, Claims 34-42 now incorporate statutory subject matter. Accordingly, applicants request that the 35 U.S.C. § 101 rejections of these claims, Claims 33-42, be withdrawn and the claims allowed.

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35 U.S.C. § 103(a) Rejections in View of Koenig and Hall

The Office Action rejected Claims 1-10, 13, 15-17, and 31-40 as being unpatentable over Koenig and Hall. For the reasons set forth below, applicants respectfully traverse the rejections.

Claim 1

In regard to Claim 1, applicants submit that Koenig and Hall, alone and in combination, fail to disclose each element of this claim. In particular, applicants submit that the cited references fail to disclose:

(b) obtaining processing data corresponding to each of the plurality of components to be mounted on the frame of the vehicle, wherein the processing data for each of the plurality of components includes location information corresponding to a logical starting position for attempting to locate a component on the frame and a range of additional positions to locate the component and three-dimensional data corresponding to a tessellated representation of the component;

after obtaining the processing data corresponding to each of the plurality of components:

(c) selecting a component of the plurality of components and setting a current position as the logical starting position in the processing data;

(d) determining whether the tessellated representation of the selected component located at the current position interferes with the tessellated representation of any other components already configured to the frame;

(e) if an interference occurs, setting a next position in the range of additional positions defined in the processing data as the current position for the selected component and repeating (d);

With regard to "obtaining processing data corresponding to each of the plurality of components," Argument 1 in the Office Action (items 3 and 4 on pages 2-3) notwithstanding, applicants submit that Koenig fails to disclose obtaining information for each component as recited in Claim 1, including a starting position, **a range of additional positions**, and three-dimensional tessellated data. Argument 1 particularly cited to two sections of Koenig,

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Col. 6, lines 59-61 and Col. 2, lines 42-46, as disclosing subject matter that indicates obtaining a starting position, a range of positions, and tessellated data. Applicants submit that the Office Action's interpretation of these passages is inaccurate. In particular, these passages cite:

the beam model analysis provides the **locations** ... of the various **components**; and

the beam model analysis is carried out to secure **locations** ... for each of the **components**.

(Emphasis added.)

The Office Action apparently interprets the fact that "locations" (plural) suggests multiple positions are obtained for each component. Applicants disagree. Applicants submit that the plural usage of "locations" simply reflects the fact that there are multiple components, each with a single location on the vehicle, hence multiple locations (one location corresponding to one component). Applicants position is supported by what is occurring: the beam model analysis positions the components on the vehicle. Applicants pose the question: why would the beam model analysis generate multiple positions for each component when it is supposed to determine the position of each component? Applicants assert that a fair and reasonable reading of Koenig is that the product of the beam model analysis is one location corresponding to one component.

Applicants further point to the temporal aspect of the claim, i.e., that the processing data, including a range of additional positions for each component, are obtained prior to locating the component to the frame. Assuming that Koenig's beam model analysis generates multiple locations for each component (which applicants expressly deny), the multiple locations are determined as a result of locating the components to the vehicle, NOT prior to doing so. Obtaining the locations of components after the components have been positioned to a vehicle is substantially distinct from **first** obtaining processing data, including a range of positions.

Regarding the iterative nature of steps (c) through (e), applicants submit that Koenig fails to teach an iterative selection of positions for a single component according to the previously

obtained range of additional positions when an interference occurs. In Argument 2, the Office Action refers to the reconfiguration of components if the vehicle model (tessellated notwithstanding) fails to conform to structural performance targets. In other words, Koenig discloses that once the vehicle is configured (at least as a model), if the vehicle fails to conform to structural performance targets, the entire vehicle is reconfigured. Applicants further note that this obviously means that the components of the vehicle DO NOT interfere, but rather the particular configuration of the vehicle fails to meet performance targets.

In contrast to Koenig, steps (c) through (e) of Claim 1 correspond to a single component such that when an interference occurs with another component, the current component is reset to another position among the range of positions until that single component no longer interferes. Applicants submit that iteratively resetting the position of a single component until that component no longer interferes with other components is substantially and patentably distinct from reconfiguring an entire vehicle if it fails to meet performance targets.

For the reasons set forth above, applicants submit that Koenig and Hall, alone and in combination, fail to teach or otherwise suggest each element of Claim 1. It is well established that a *prima facie* case of obviousness is found only when each element of the rejected claim in the cited combination of references is found. See M.P.E.P. § 2143. See also, *In re Royka*, 490 F.2d 9810, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As applicants submit that a *prima facie* case of obviousness cannot be made with regard to amended Claim 1 in view of Koenig and Hall, applicants request that the 35 U.S.C. § 103(a) rejection be withdrawn and the claim allowed.

Claims 2-10, 13, and 15-16

As applicants submit that Claim 1 is in condition for allowance over the cited references Koenig and Hall, applicants submit that dependent Claims 2-10, 13, and 15-16 are also in condition for allowance. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

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Applicants therefore request that the 35 U.S.C. § 103(a) rejections of Claims 2-10, 13, and 15-16 be withdrawn and the claims allowed.

In addition to depending from Claim 1, Claims 2-10, 13, and 15-16 include additional elements that further distinguish them from the cited and applied references.

Claims 17-27, and 31-32

Independent Claim 17 recites similar elements to those now found in Claim 1, and was rejected for essentially the same rationale. In particular, Claim 17 recites:

- (b) obtaining processing data corresponding to each of the plurality of components to be mounted on the frame of the vehicle, wherein the processing data for each of the plurality of components includes location information corresponding to a logical starting position for attempting to locate a component on the frame and a range of additional dimensional positions to locate the component and three-dimensional data corresponding to a tessellated representation of the component;
- after obtaining the processing data corresponding to each of the plurality of components to be mounted on the frame of the vehicle:
- (c) selecting a component of the plurality of components and setting a current position as the starting position in the processing data;
- (d) configuring a position for the selected component based upon determining whether a tessellated representation of the selected component interferes with the tessellated representation of any other components already configured to the frame;
- (e) repeating (d) for any remaining components of the plurality of components; and
- (f) generating a frame design corresponding to the configured positions for each of the plurality of components.

In view of the same reasons set forth above regarding Claim 1, applicants submit that Claim 17 is in condition for allowance. Accordingly, applicants request that the 35 U.S.C. § 103(a) rejection be withdrawn and the claim allowed.

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Claims 18-27 and 31-32, being dependent from Claim 17, are also in condition for allowance over the cited references, and applicants request that the rejections be withdrawn and the claims allowed.

Claims 33-40

Independent Claim 33 recites similar elements to those found in Claims 1 and 17. In particular, Claim 33 recites:

a processing data module for storing processing data corresponding to each of the plurality of components to be mounted on the frame of the vehicle, wherein the processing data includes location information corresponding to a logical starting position for attempting to locate a component on the frame and a range of additional positions to locate the component and three-dimensional data corresponding to a tessellated representation of the component; and

a configuration module for obtaining the processing data corresponding to each of the plurality of components to be mounted on the frame and, after obtaining the processing data, configuring a location for a selected component of the plurality of components to be mounted on a frame of a vehicle based upon an interference check corresponding to comparison of a tessellated representation of the selected component interferes with the tessellated representation of any other components already configured to the frame.

As discussed above in regard to Claim 1, applicants submit that Koenig and Hall, alone and in combination, fail to disclose and/or teach processing data including a logical starting position, a range of additional positions, and three-dimensional data corresponding to a tessellated representation of the component. Applicants further submit that Koenig and Hall fails to disclose obtaining the processing data prior to configuring the components.

As Koenig and Hall, alone and in combination, fail to disclose and/or teach each element of Claim 33 (as discussed above), applicants submit that Claim 33 is in condition for allowance, and request that the 35 U.S.C. § 103(a) rejection of this claim be withdrawn and the claim allowed.

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Claims 34-40 depend from independent Claim 33, and are submitted to be in condition for allowance as well.

35 U.S.C. § 103(a) Rejections over Koenig, Hall, and Hill

The Office Action rejected Claims 11, 12, 14, 28-30, 41, and 42 as being unpatentable in view of Koenig, Hall, and Hill. For the reasons set forth below, applicants respectfully traverse the rejections.

Claims 11, 12, and 14

Each of these claims depend from independent Claim 1, which applicants submit is in condition for allowance. Hill was relied upon as disclosing a tree structure of data and traversing said tree structure. Irrespective of whether or not Hill discloses these elements, applicants note that Hill fails to disclose or teach the elements of Claim 1 that are lacking in regard to the combination of Koenig and Hall as discussed above. Accordingly, applicants submit Claims 11, 12, and 14 are in condition for allowance, and request that the 35 U.S.C. § 103(a) rejections be withdrawn and the claims allowed.

Claims 28-30

As above, each of these claims depends from independent Claim 17, which applicants submit is in condition for allowance. Hill was relied upon as disclosing a tree structure of data and traversing said tree structure. Irrespective of whether or not Hill discloses these elements, applicants note that Hill fails to disclose or teach the elements of Claim 17 that are lacking in regard to the combination of Koenig and Hall as discussed above. Accordingly, applicants submit Claims 28-30 are in condition for allowance, and request that the 35 U.S.C. § 103(a) rejections be withdrawn and the claims allowed.

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Claims 41-42

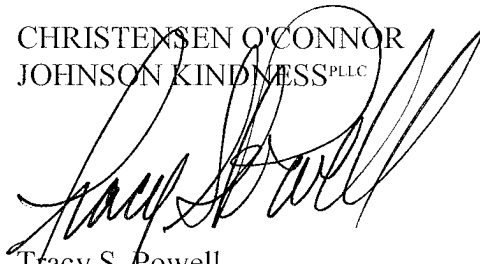
As with the prior sets of claims, each of these claims depends from independent Claim 33, which applicants submit is in condition for allowance. Hill was relied upon as disclosing a tree structure of data and traversing said tree structure. Irrespective of whether or not Hill discloses these elements, applicants note that Hill fails to disclose or teach the elements of Claim 33 that are lacking in regard to the combination of Koenig and Hall as discussed above. Accordingly, applicants submit Claims 41-42 are in condition for allowance, and request that the 35 U.S.C. § 103(a) rejections be withdrawn and the claims allowed.

CONCLUSION

In light of the above, applicants submit that the pending claims are in condition for allowance and respectfully request an early notice to that effect. The Examiner is invited to contact applicants' attorney at the number provided below should any questions or issues remain.

Respectfully submitted,

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